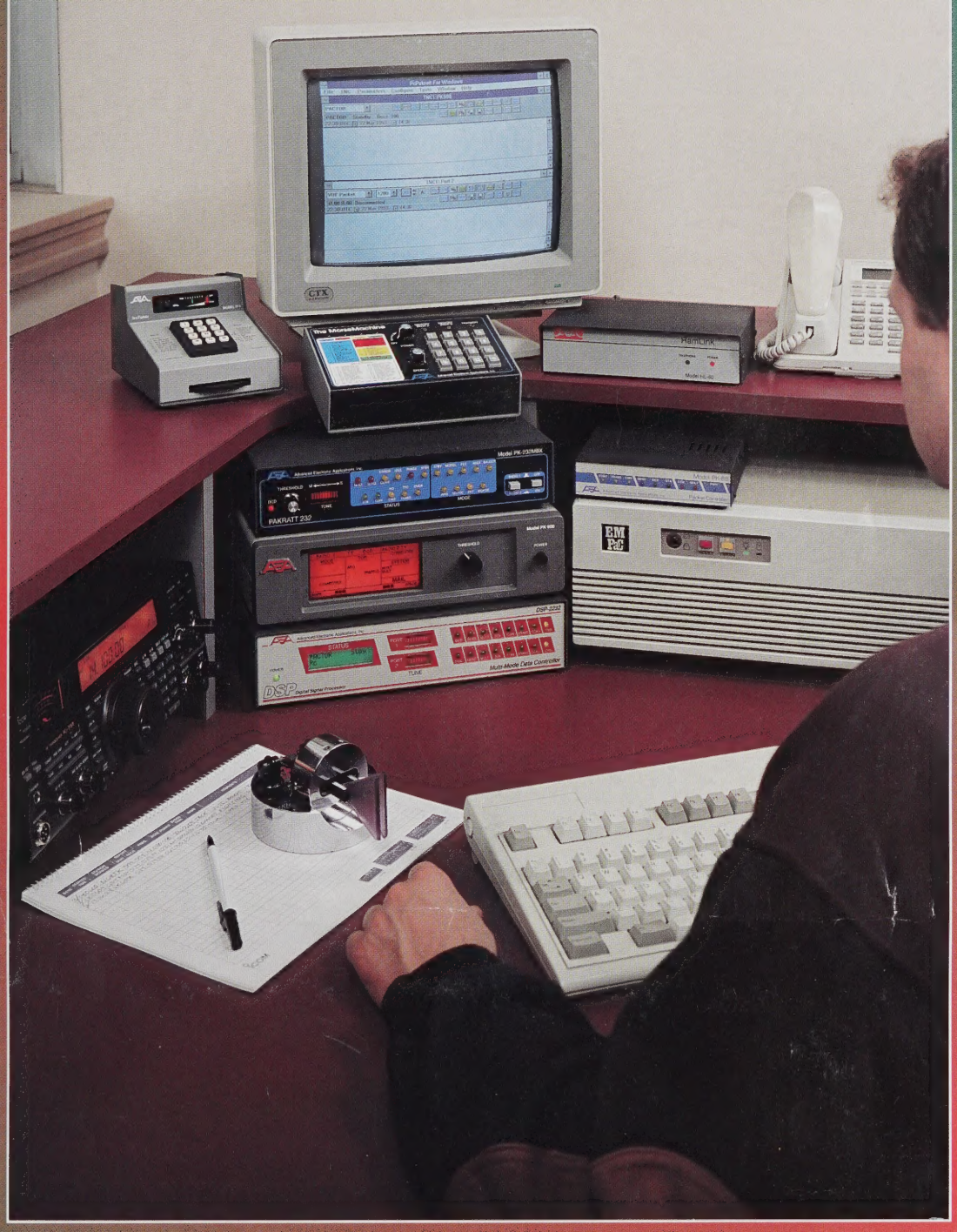


PRODUCT CATALOG, 1993

ADVANCED ELECTRONIC APPLICATIONS, INC.

PO Box C2160
2006 - 196th St. SW
Lynnwood, WA 98036

ADVANCING AMATEUR RADIO THROUGH PROVEN LEADERSHIP, PRODUCT INNOVATION & SOLID SERVICE.

AEA was founded 16 years ago with one purpose in mind:

to offer breakthrough radio technology to amateur operators worldwide. Our mission remains unchanged. We are committed to producing superior amateur radio products built on the premise that engineering does make the difference. The results speak for themselves. AEA has grown into a multi-million dollar company by serving the needs of the amateur radio community.

AEA - Leading the Way with Breakthrough Technology

- 1st Single chip microcomputer product introduced to radio market
- 1st Microcomputer-based Electronic Keyer product line (Morsematic)
- Patented Cones in the IsoPole™ line of vertical antennas
- The MBA-RO 32-character reader with dual-channel filtering
- The CP-1 Computer Patch with dual-channel filtering
- 1st Multi-Mode Data Controller with AMTOR in the US
- 1st Interactive CW Contest Trainer (Dr DX™)
- 1st Commercially Produced Packet TNC (PKT-1)
- 1st Multi-Mode Data Controller with FAX (PK-232, most popular multi-mode on the market)
- 1st Electronic Keyer with an Interactive QSO Trainer Mode (MM-3 Morse Machine™)
- 1st Commercial Quality Fast-Scan TV Transceiver for the amateur radio market with Vestigial Sideband (VSB) filtering for maximum spectrum utilization (FSTV-430A)
- 1st Slow-Scan TV unit with noise correction (AVT Master - Amiga Video Terminal)

Our Staff has Over 336 Years of Licensed Amateur Experience.

To say we are dedicated radio operators is an understatement. It explains why we are able to immediately recognize and know the needs of amateur radio. Our $1,000 annual Amateur Ambassador Award is another example of our commitment to radio by awarding amateurs who promote amateur radio to those outside the hobby.

AEA lives and breathes customer service. Our technicians are ready to provide personal technical assistance over the phone (Three Customer Service lines plus a dedicated Upgrade Hotline) as well as by mail and CompuServe. AEA also strives to make repair turnaround time the shortest in the industry.

Our Extensive Line of Data Controllers, Antennas, and Special Transceivers

REPRESENTS SOME OF THE MOST EXCITING VALUES IN AMATEUR RADIO TODAY... AND THE FUTURE LOOKS BETTER THAN EVER.

Within these pages you will find equipment that reflects innovative thinking, exciting product features and sound engineering designs that deliver consistent, high quality, trouble-free performance...from the high performance PK-900 Multi-Mode Controller to the incredible IsoLoop HF Antenna. It's all here. You get solid applications help and fast, efficient professional service. Just what you would expect from an established and respected leader.

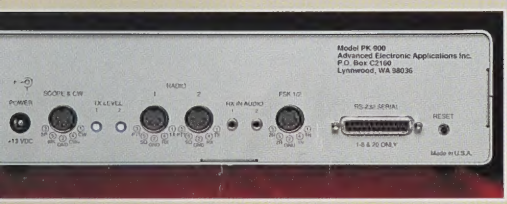
You always get more value for your dollar with AEA.

Connect with us.

THE NEW PK-900

Step Up to a New Standard in Multi-Mode Data Controllers!

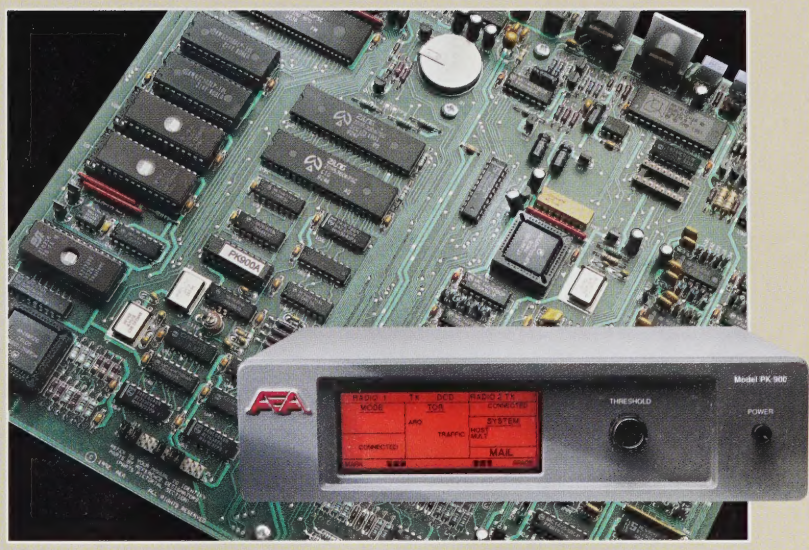
The next generation of our U.S.A.-made multi-mode data controllers is here. When you're ready to step up beyond our popular PK-232 MBX multi-mode controller, the PK-900 is it. Its performance is comparable to units costing hundreds...even thousands of dollars more. From a capability standpoint, the PK-900 is positioned between the PK-232 and the DSP-2232, exhibiting features found on both. The PK-900 has compromised nothing. It has established a new benchmark in performance. It has all the modes and basic features of the PK-232MBX and a good deal more.



Dual Simultaneous Ports with HF or VHF on either port. With a keystroke, you can switch between radio ports and still receive signals on both ports simultaneously. The days of hitting the Radio 1/Radio 2 switch and allowing only one conversation at a time are over.

20 selectable software modems are available. They range from FSK 45bps 170 Hz to a disconnect header, where you can plug in a modem of your own. Modem selection is as easy as typing the MODem command to select the one you want.

Optional 9600 baud modem board gives you more power. This easy-to-install board makes "getting up to speed" easier than ever.You can bounce packets off satellites or communicate with terrestrial stations at a blazing 9600 baud. The PK-900 uses three dedicated processors and an innovative circuit design giving it the power and flexibility you want from a multi-mode controller that will serve you well into the future.



New PACTOR option opens up a universe of capabilities. PACTOR's (PACket / amTOR) specific benefits: Automatic Speed Selection - 100 or 200 bps, Error Free Data, transmission Memory ARQ, personal MailDrop, and ASCII Data Compression. The potential of this new mode is practically limitless! Installation takes only minutes.

Excellent filtering of the channel 1 demodulator is achieved using a high-performance Bandpass Filter-Limiter-Discriminator design. The 8-pole Chebyshev bandpass filter offers six software selectable tone shifts - 170 to 1000Hz. Other tone pairs can be substituted by just changing six resistors per tone pair. The six pole post detection linear phase low pass filter is optimized for data rates from 45 to 2000 baud.

Optional 16-gray scale AEA-FAX 900 software +your PC compatible computer, delivers sharp weather FAX images to your screen, disk or printer.

Unique status/mode tuning LCD display tells you everything at a glance. Easy to see and read, the large, backlit display provides all essential status and mode information for both ports. Its 20-segment multi-mode bar graph makes HF tuning easy. The display will even inform you of unread mail.

All standard multi-mode features needed for digital amateur radio operation are included. Specifically: Packet, ARQ, ARQL, ARQ E3, FEC, ASCII, Baudot, Morse Code, PACTOR (optional), B&W FAX, WEFAX (with optional software), NAVTEX, TDM and Signal Identification. 17K byte dynamically allocated packet and AMTOR MailDrop, Packet Lite for enhanced HF operation, and host mode for superior software support. Interface connection for AFSK, direct FSK, direct CW keying, tuning scope, plus selectable State Machine PLL or in-band energy level DCD. Also test mode for easy troubleshooting.

Specifications (PK-900)

Processors Used:	Hitachi 64180 CPU, Motorola 68HC05C4 DDS programmable AFSK tone generator and Motorola 68HC05B4 display controller and data A/D
Terminal Baud Rates:	45, 50, 75, 110, 200, 300, 600, 1200, 2400, 4800, 9600, 19,200 baud rates
Dual Simultaneous Radio Ports:	HF or VHF on either port (port 2: HF/VHF Packet only)
Data Buffers:	Up to17K bytes, dynamically allocated with MailDrop
Radio Channel 1 Demodulator:	Bandpass Filter - Limiter - Discriminator design. Eight-pole selectable center frequency and bandwidth Chebyshev bandpass filter. Programmable DDS tone generator.
Radio Channel 2 Modulator/Demodulator:	AMD 7910 (Optional K9NG/G3RUH compatible 9600 baud modem) software selectable TAPR modem disconnect header interface.
Operating Modes:	Transmit and receive, Port 1: Morse, Baudot, Packet, Packet Lite for enhanced HF operation, PACTOR (optional), ASCII, AMTOR, FEC, ARQL, B&W FAX
Receive only:	NAVTEX, SIAM, TDM, ARQ E3. 16 level gray WEFAX* *(w/optional PC compatible software)
Port 2 (TX/RX):	Packet, Packet Lite.
Power Requirement:	+12 to 16 VDC @1100mA, (1500mA recommended)
Dimensions:	11.75" (29.84cm) x 11.75" (29.84cm) x 3.5" (8.89cm)
Weight:	4.6 lbs (2.09 kg).

DSP 1232 AND DSP 2232

Take a Fast Trip to the Future with These Digital Signal Processing (DSP) Multi-Mode Data Controllers!

AEA has the most advanced and adaptable data controllers on the market today: the DSP-1232 with two switchable ports and the DSP-2232 with two simultaneous ports. The capabilities for both are endless.

Here's how the DSP provides a new level of performance and versatility.

The input analog signal is digitized by a 12-bit high speed analog-to-digital converter. The digitized data is processed by an extremely fast, specialized Motorola 56001 computer running at 24 MHz to digitally filter and analyze the data signals. The processed, demodulated signals are then passed to a second processor, the Hitachi 64180, for protocol conversion. One great advantage of the DSP is that new modems or modes only require new software. No new hardware or modifications are required for new modems.

Internal software provides all popular digital amateur data modes (PACTOR optional)
As new modes become available, all you need is a replacement EPROM or a telephone-BBS downloaded binary file. All PK-232 modems and all satellite modems are now available, plus the K9NG compatible 9600 bps modems. On the horizon are multi-level gray scale WEFAX and WEFAX APT and SSTV. Any desired FSK tone pair can be programmed for the DSP units as well as QAM and QPSK or other specialized modems. The DSP multi-mode data controllers are the most versatile on the market. Here are a few other important benefits:

✔ **Unique LCD read-out on the DSP-2232 displays the mode and diagnostics for both channels.**

✔ **Upgradeable flexibility for the DSP-1232 allows it to accept all the features of the DSP-2232 at any time.**

Inside Every DSP are All the Outstanding Features of the PK-232MBX!

Everything that makes the PK-232MBX such a success are included in both DSP units. You get the latest version of PakMail mailbox with selective control of 3rd-party traffic and bulletin board system (BBS) compatibility so messages can be automatically forwarded. Also included is the type of Host Mode most preferred by professional programmers for efficient control of the TNC. In packet, the DSP is compatible with the TCP/ IP networking protocol. This requires the data controller to recognize special commands such as KISS, PERSISTENCE, and SLOTTIME not found on all controllers.

For FAX printing, most parallel printers can be connected directly to the DSP or to your computer. Together with the appropriate software, you can print HF monitored FAX signals. The DSP supports most popular dot matrix printing standards.

DSP controllers will decode Time Division Multiplex (TDM) signals. TDM is a mode that resembles FEC AMTOR and is used in commercial applications. TDM uses one subcarrier, but assigns separate data channels to different time slots.

Specifications (DSP 2232)

Modem Input Dynamic Range:	50mV to 500mV RMS
Demodulator:	Motorola 56001 Digital Signal Processor (DSP) running at 24 MHz
Modulator:	Phase continuous sinewave, AFSK generator Modulator Output Level: 5-100 mV RMS into 600 ohms, adjustable for each channel with side-panel controls
Packet Protocol:	AX.25 L2V2 (previous version supported)
Receive Bandpass:	Automatically switched by operating mode
VHF Packet:	Center frequency 1700 Hz, bandwidth 2600 Hz
HF Packet:	Center frequency 2210 Hz, bandwidth 450 Hz
CW:	Center frequency 750 Hz, bandwidth 200 Hz
Processor System:	Hitachi 64180
RAM:	64 Kbytes Lithium battery-backed
ROM:	Up to 384 Kbytes may be used (128 Kbytes are dedicated to DSP ROM Modems leaving 256K for 64180 program)
Hardware HDLC:	Zilog 8530 SCC
INPUT/OUTPUT CONNECTIONS	
Radio Interface:	Two 5 pin DIN connectors, simultaneous operation on the DSP-2232, software selectable on the DSP-1232
Input/Output Lines:	Receive audio, transmit audio, +/- PTT (+25/-40 VDC), external squelch input, ground
	Up/down frequency control outputs for each port
Direct FSK Outputs:	Normal/Reverse
CW keying Outputs:	Positive: +100 VDC max, at up to 100 mA Negative: -30 VDC max, at up to 20 mA
Terminal Interface:	RS-232-C DB-9P connector, RS-232-C with full handshake (software and hardware handshake)
Terminal Data Rates:	Autobaud selection of 110, 300, 600, 1200, 2400, 4800, 9600 and 19,200 BPS. TBAUD adds 150, 200, 400 and 38,400 BPS terminal rates.
Parallel Printer Port:	IBM compatible 25-pin bi-directional parallel port (DB-25 connector)
FRONT PANEL CONTROLS AND INDICATORS	
Front Panel Indicators:	10-segment discriminator-type bargraph indicator for tuning of each radio port
Status Display:	STATUS LCD display showing Mode status
Power Indicator:	Power LED (green)
PHYSICAL	
Power Requirements:	+13 VDC (12 to 16 VDC) @ 1.1A
Dimensions:	12" (305mm)W x 9.8" (249mm)D x 2.9" (73.7mm)H
Weight:	3 lbs. 12 oz. (1.7 kg)

PK-232MBX

Connect With the World's #1 Leading Multi-Mode Data Controller!

This controller combines all the amateur data communication modes into one comprehensive unit. Over 65,000 have been sold world-wide. Operators know when they've found a winner!

Benefits of the PK-232MBX include: *Morse code *Baudot *ASCII *AMTOR/SITOR 476 and 625 *PACTOR (optional) *HF & VHF Packet *B&W FAX receive/transmit *Commercial standard NAVTEX/ AMTEX automated mariner/ARRL information services.

The PK-232 also provides any RS-232 compatible computer or terminal with complete amateur digital operating capabilities. All decoding, signal processing and protocol software is included on ROM. To interface, only a simple terminal program is required. The PK-232MBX also comes with an interface cable that connects the unit directly with the RS-232 port of the computer.

The PK-232MBX is specifically designed for multi-mode operation ...not just a packet controller with supplemental firmware. The system is Z-80A based and has hardware HDLC using Zilog 8530 SCC. Its internal modem can transceive packet at rates from 45 to 1200 baud (2400 bps optional), with the option of using an external modem for higher baud rates up to 9600 baud. Also featured, a no-nonsense VHF/HF/CW modem with an 8-pole Chebyshev bandpass filter, followed by a limiter-discriminator with automatic threshold correction. The modem can copy shifts from 85 to 1500 HZ in two ranges. Transmitter tones are low distortion sinewave, phase continuous AFSK, Bell 202 standard (1200-2200 Hz) for VHF and 2110-2310 (compatible with 170 Hz shift for RTTY) for HF.

Internal software includes SIAM™ - Signal Identification and Acquisition Mode. SIAM automatically identifies incoming Baudot, ASCII, AMTOR/SITOR and TDM (Time Division Multiplex) signals, switching the PK-232MBX to the recognized mode and starting the data display.

18K byte PakMail mailbox with selective control of 3rd party traffic is standard. It uses a subset of popular WØRLI/WA7MBL commands, including List Mine, Kill Mine, Read Mine, Edit, Help, etc. Your local, full-service BBS can automatically forward and reverse-forward messages directly to and from your station. The PK-232MBX can be used with WØRLI and WA7MBL packet bulletin board programs.

Full-featured Host mode is provided for efficient control. In packet, the PK-232MBX internal program is compatible with the popular TCP/IP networking protocol. This requires the TNC to feature special commands...KISS, PERSISTENCE, SLOTTIME...not found in all controllers.

Other benefits are: *FAX printing - accepts many parallel printers or it can be connected to your computer (with appropriate applications software) to print HF monitored FAX signals *Lithium Battery Backed RAM *Adjustable Threshold Control *Two Radio Ports - interchangeable HF or VHF operation with front panel select buttons *External Modem Disconnect - internal modem bypass for compatibility with higher speed modems *Scope & FSK Outputs - separate accessory port provides both mark/space scope outputs and permits connection to your HF radio's FSK input *Upgradeable - step up to latest version with plug-in ROMs and upgrade kits such as 2400 Baud option and PACTOR (contact us for further information).

Hardware included: RS-232 shielded cable, (2) radio cables & all rear panel mating connectors. Optional AC-4 power supply and pre-made radio cables available through authorized AEA dealers or directly from AEA.

Specifications (PK-232MBX)

Modem Input Dynamic Range:	5 mV to 500mV RMS
Demodulator:	8-pole Chebyshev bandpass filter, limiter, 4-pole discriminator,5-pole post-detection low-pass filter
Modulator:	Phase continuous sinewave, AFSK generator
Modulator Output Level:	5-200 mV RMS
Packet Protocol:	AX.25 L2V2 (previous version supported)
Processor System:	Zilog Z-80
RAM:	Battery backed, 32K bytes
ROM:	128K bytes
Hardware HDLC:	Zilog 8530 SCC

REAR PANEL INPUT/OUTPUT CONNECTIONS

Radio Interfaces:	Two 5-pin, front panel selectable (receive audio, transmit audio, PTT, auxiliary squelch, ground)
External Modem:	5-pin: transmit data, receive data, carrier detect, ground, PTT
FSK Outputs:	Normal and reverse
Scope Outputs:	Mark, space
CW Keying Outputs:	+100 VDC @ 200 mA max. and -25 V @ 30 mA max.
Terminal Interface:	RS-232-C 25 pin DB-25 connector (pins 1-8 and 20, software and hardware handshake)
Terminal Data Rates:	Autobaud settings at 300, 600, 1200, 2400, 4800 and 9600. TBAUD adds 45, 50, 75, 100, 110, 150, 200, 400-BPS terminal rates.
Printer Interface:	Centronics parallel printer output with special cable (optional)

FRONT PANEL CONTROLS AND INDICATORS

Controls:	Power, radio 1/2 selector, threshold adjust
Indicators:	Data carrier detect LED, 10 segment HF bargraph tuning indicator, mode indicators (Baudot, ASCII, Packet, Morse, SELFEC, FEC, ARQ Mode L, AMTOR STBY), Status Indicators (STBY, Phase, Idle, Error, RQ, Tfc, Over, MULT, PTT, CONV, CMD, CON, Send STA, TRANSPARENT)

PHYSICAL

Power Requirement:	+12 to +16 VDC @ 850 mA (1A recommended)
Dimensions:	11" (279mm)W x 8.25" (210mm)D x 2.5" (64mm)H
Weight:	3 lbs. (1.35 kg)

MULTI-MODE PRODUCT COMPARISON CHART

	DSP-2232	PK-900	PK-232
Dual Port	yes	yes	no
Packet/AMTOR MailDrop	yes	yes	yes
B&W Fax	yes	yes	yes
9600 bps	yes	With optional board	no
PSK Satellite Modems	yes	no	no
Optional PACTOR	yes	yes	yes
Signal Ident. Mode (SIAM™)	yes	yes	yes
Standard Digital Modes	yes	yes	yes
Packet Lite™	yes	yes	yes
State Machine DCD	no	yes	no
19,200 TBAUD	yes	yes	no
Memory ARQ	yes	yes	yes (Digital Only)
LCD Readout	yes	yes	no
External Reset Button	yes	yes	no
Separate AFSK Controls	yes	yes	no
Digital Signal Processing	yes	no	no

PK-88

This HF/VHF Packet TNC is Your Best Value in Packet Radio!

The PK-88 is loaded with unique operating features and backed with proven hardware and software design.

Enjoy the benefits of MailDrop, an extremely efficient 18K byte personal Mailbox with selectable 3rd-party traffic. When your PK or PCB-88 is active, other stations can connect to you and exchange personal messages, traffic or bulletins. MailDrop accepts inbound mail forwarding and supports reverse forwarding to your local WØRLI/ WA7MBL/AA4RE /MSYS autoforwarding packet BBS. The PK-88's internal lithium battery will hold the MailDrop contents when the unit is off.

The PK-88 not only offers you the standard TNC features, you also get these exceptional bonuses:

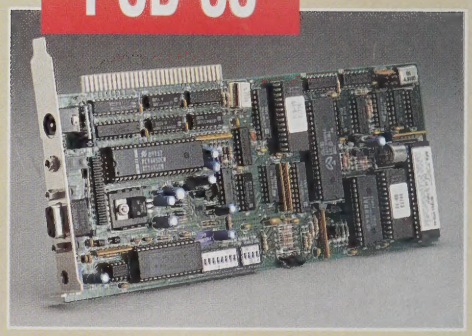
- AEA's POPULAR HOST MODE that is preferred by programmers everywhere for its powerful application interface.
- KISS COMMAND that provides compatibility with KA9Q's "NET" TCP/IP and other networking protocol suites.
- NET/ROM (Software 2000) COMPATIBILITY that turns your '88 into a Layer 3 and 4 networking mode.
- PACKET DUMP SUPPRESSION to prevent dumping unsent packets on the radio channel if the link fails.
- PRIORITIZED ACKNOWLEDGEMENT (ACKPRIOR) PROTOCOL that improves performance on busy packet channels.
- CUSTOM COMMAND for allowing limited PK-88 customization for non-standard applications.
- ENHANCED MBX COMMAND permits display of the data in I- and UI-frames, without showing packet headers and without retries.
- EXCLUSIVE MPROTO COMMAND to control display of non-ASCII packets from Layer 3 switches and network nodes.
- EXCLUSIVE MFILTER that suppresses all graphics and control characters except TAB, CR and LF.
- EXCLUSIVE CFROM and DFROM COMMANDS to permit selective connecting and digipeating..."Accept" or "Reject" digipeater operation by call signs.

Specifications (PK-88)

Modem Input Range:	5 to 770 mV RMS
Demodulator:	AMD 7910 World Chip
Modulator:	Phase-continuous sinewave, AFSK generator
Modulator Output Level:	5 to 300 mV RMS
Packet Protocol:	AX.25 L2V2 (version 1.0 supported)
Processor System:	Zilog Z-80
RAM:	Lithium battery-backed, 32K bytes
ROM:	32K bytes
Hardware HDLC:	Zilog 8530 SCC
Radio Interfaces:	Locking 8-pin-receive audio, transmit audio, PTT, auxiliary squelch, ground
External Modem:	Transmit data, receive data, data carrier, detect, clock, ground
Terminal Data Rates:	Single character auto-baud detection at 300, 600, 1200, 2400 4800, 9600, 19,200. TBAUD adds 45, 50, 57, 75, 100, 110, 150, 200 and 400 BPS terminal rates
PK-88 Front Panel Indicators:	Converse, transparent, command, send, data carrier detect, status, connect, multiple connect, power
PK-88 Power Requirement:	+12 to +16 VDC @ 550 mA
PK-88 Dimensions:	7.5" (191mm)W x 6" (152mm)D x 1.5" (38mm)H
PK-88 Weight:	2.4 lbs. (1.1kg)

PCB-88 SPECIFICATIONS	
As above except:	
Radio Interface:	DB-9 (receive audio, transmit audio, PTT, auxiliary squelch, ground)
External Modem Connection:	TAPR's modem disconnect header
PCB-88 Power Requirement:	+12 to +16 VDC @ 375 mA AC-1, included), or internal computer power +12 VDC @ 375 mA
PCB-88 Dimensions:	9.7555" (248mm) x 4.88" (124mm) x 0.88" (22mm)
PCB-88 Weight:	9 oz (0.25kg)

PCB-88



This HF/VHF Packet Controller Board Has All the Features of the PK-88 and Plugs into an 8-or 16-Bit Expansion Slot on Your IBM PC or Compatible Computer.

It has a true DCD circuit built in, along with a standard modem disconnect header, allowing for easy hook up of external modems for high-speed, PSK, etc. In addition, the PCB-88 includes PC-Pakratt-88 host mode program for easy control of the packet device.

The PCB-88 can get DC power direct from the computer's bus lines or from the included (US models only) AC-1 12VDC adapter. This allows the PCB-88's maildrop to receive messages even when the computer is off. All necessary cables for hook up, instruction manual and installation instructions are included.

HAM LINK

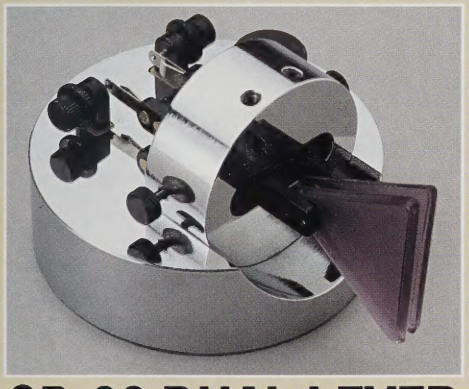
Now, control any function of your ham station from anywhere by using your Touch Tone (AT&T™) telephone! What an accessory! HamLink connects to your microphone, external speaker, key jack, the computer port of your transceiver, and to your telephone. There is no need for a second phone line. HamLink functions perfectly even if you have an answering machine connected to the same phone line.

A secret code is your access and blocks unwanted people from using your equipment. When the correct password is entered via your phone's TouchTone pad, a beep will sound and you will hear the signals on the frequency to which your equipment is tuned. (You can also connect an external relay to HamLink to control the AC station power.)

Your TouchTone pad becomes your remote control to your radio. Change bands and frequency, tune up or down, switch modes (AM/SSB/FM/CW), scan, run split VFO or virtually any other radio feature you have. The "star" or asterisk button keys your transmitter. On SSB, pressing the "star" key once causes your radio to go to transmit. To end the transmission, simply depress the asterisk key once more. You will hear the receiver's audio coming back to you. To send CW, switch to the CW mode; the "star" key becomes your telegraph key!

OP LINK HAM LINK ACCESSORY

Plug in your favorite key and start broadcasting high speed CW. Use a headset/boom mic combination or stereo headsets at the user end of the connection for great audio. OpLink allows the use of the Icom HS-10 or Yaesu YH-2 headset boom microphone combination. This allows you to use a mic that is tailored for amateur use instead of the element in your telephone. OpLink also has a key jack so you can plug in your keyer, bug, or hand key to allow high speed CW to be sent.



SB-90 DUAL LEVER CW PADDLE

Russia's finest dual paddle features smooth operation, bold circular design, and rugged construction.

This instrument is a must for the CW enthusiast. The base and support yoke are chrome plated, and the keying contacts are solid silver for long life. The distinctive Dual Levers are supported by separate vertical rods with needle bearings and mating pivot seats in top mounted set screws. This means the paddle "wears in" rather than "wears out!" There is absolutely no wobble or play in its action.

Finger pieces are lightly textured for comfort and the extra spring arms behind each lever add a pleasant softness welcomed during long contests. Separate adjustments for travel and tension on each lever cover a wide range for "personal tuning." The SB-90 works with all types of electronic keyers.

The SB-90 measures 4"(10.2cm) in diameter, 2-¾"(7cm) tall and weighs over 3 pounds (1.5kg), and is fitted with non-skid rubber feet to prevent "walking." Its 5-pin socket is conveniently located in the rear and eliminates the "dangling and frayed cord" syndrome. This key is a timeless classic and is the perfect companion for the MM-3 keyer!

RADIO LINK

Use your hand held or mobile radio to access your HF Station. RadioLink goes between your HF/VHF/UHF transceiver and a repeater or a 220MHz or UHF full duplex link. You can then operate your station from a hand held or mobile radio. RadioLink allows you to set your transceiver on a specific frequency, tune to a frequency, set mode, access memories and scan. Standard cable is provided that allows you to directly plug into most VHF/UHF radios with an 8-pin microphone connector.

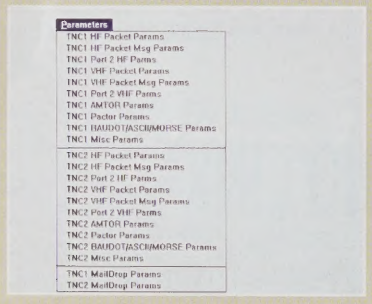
Plus, RadioLink will announce the frequency and mode with its built-in voice synthesizer. It also has an Inactivity Timer, so operation will be terminated if there has been no activity over a specific period of time. Finally, there are 6 logic line outputs for controlling external devices. Controlled equipment can be tuned in 10Hz, 100Hz, 1KHz, or 5 KHz steps, and RadioLink can interface with equipment that does not have a computer port for commercial use. RadioLink allows a COR (carrier operated relay) to key the HF radio. This feature can be used to eliminate the need to use the "star" button to key the controlled transmitter. RadioLink can also be swtiched to a local mode so the user does not have to plug/unplug a local mic, key and speaker.

PC-PAKRATT

PC-Pakratt for Windows

This is the first and only data controller program for Microsoft Windows® on the market today...and it's from AEA!

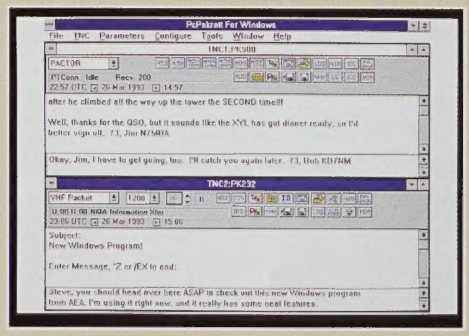
PC-Pakratt for Windows is a true Windows application, providing you with all the terrific features associated with Windows: like Clipboard Cut&Paste, Background execution, multi-tasking, etc. Its Graphical User Interface (GUI) environment makes the program functions quick and easy to access.



PC-Pakratt for Windows works with the entire family of data controllers, including the new PK-900 and DSP-2232. And it has all the features digital ham radio operators have asked for.

- Supports dual-port controllers
- Can run minimized or from the background, if desired
- Runs two AEA TNCs simultaneously
- Supports VHF packet, HF packet, ASCII, Baudot, AMTOR, PACTOR, Morse code, Signal Analysis and Dumb Terminal modes
- Performs binary file transfers with just the click of an on-screen button
- Has a complete macro facility
- Built-in QSO logging program
- Separate parameter screens for HF Packet, VHF Packet, AMTOR/ RTTY and Maildrop parameters
- Separate parameter files for each port
- "Point and click" to access virtually all data controller functions
- Extensive "help" system
- Full control of screen colors
- Easy access to useful tools such as: Write, Notepad, Control Panel...
- Selectable screen and printer fonts
- On-screen status
- Smart startup recognizes TNC type and accesses program functions accordingly
- Requires Windows 3.1, 4 meg of free hard disk storage space and 2 meg RAM (4 meg recommended)
- Separate windows for mailbox operation and QSO Logging
- The CONFIGURE menu allows you to specify defaults, set screen colors, etc.
- Includes PK-FAX, B&W FAX display program

AEA knows that a good software program can make all the difference in whether you find your hobby a pleasure or a tedious chore. PC-Pakratt for Windows has been designed with this in mind...and only AEA offers it!



PC-Pakratt for DOS

Designed for the IBM-PC or compatible computers and all AEA controllers.

PC-Pakratt II version 5.5 is a split screen terminal program for operation of Morse code, Baudot, ASCII, AMTOR, PACTOR, NAVTEX and Packet. Among its many features:

- Friendly, on-screen, one touch Help menu to define commands and parameters for all modes
- Mouse support
- DOS gateway
- Full QSO logging feature
- Fast Initialization / reduces start-up time to a few seconds
- Complete macro key facility
- Supports COM 1- 4
- Saves PakMail messages to disk
- 900 line scroll-back buffer stores incoming data
- PK-EDIT for editing message files
- 5 message/command buffers allow pre-programming of messages or commands for transmission with a single keystroke
- Requires minimum of 512K RAM and DOS 3.0 or higher
- Includes PK-FAX, B&W FAX display program.

Also available:

AEA's MacRATT with FAX version 2.1 computer program is for Macintosh computers. It makes using AEA's data controllers easy with just the click of a mouse!

PC-Pakratt-88 is a lower-cost packet-only version of the PC-Pakratt II program for the PK-88. Most features of the PC-Pakratt II are included, but RTTY, FAX, AMTOR, etc., support have been removed as the PK-88 is a Packet-only TNC.

COM-Pakratt with FAX for the Commodore 64 computer supports all AEA controllers except the PCB-88. The set is supplied on two ROM plug-in cartridges and includes an RS-232 level converter.

Software Selection Table

	PC-PAKRATT for Windows	PC-PAKRATT II	PC-PAKRATT 88	COM-PAKRATT	MacRATT
Which Controllers*	All	All	PK/PCB-88 only	All Except PCB-88	All Except PCB-88
Computer Type	PC Compatible	PC Compatible	PC Compatible	Commodore C-64	Macintosh
PACTOR	yes***	yes***	no	no	coming soon
FAX	yes**	yes**	no	yes	yes
Binary File Transfer	yes	yes	yes	no	yes
Disk & Printer Access	yes	yes	yes	yes	yes
Help	yes	yes	yes	no	no

*All controllers denotes PK-88, PCB-88, PK-232, PK-900, DSP-1232, DSP-2232.
**Includes DOS-based PK-FAX B&W Fax receive & transmit program. Works with multi-mode controllers only.
***Requires AEA multi-mode with PACTOR option installed.

AEA-FAX

Now Get Our Exclusive Analog FAX Reception Working For You!

The AEA-FAX is a stand-alone, multi-intensity gray scale demodulator and display software package.

It is designed for IBM compatible computers and can work with or without a PK-232 without affecting the other modes. With a VGA

monitor, you can receive up to 16 gray levels, giving outstanding detail on satellite maps and wire photos. WEFAX images can also be received and EGA, CGA and Hercules monochrome adapters and monitors are supported as well (with fewer "gray" shades).

Your hardware consists of a small RS-232 connector housing, which contains the circuitry for demodulation.

A two-conductor shielded audio cable runs from the assembly to your HF receiver's external speaker output. The connector housing has a female DB-25 connector on one side to interface with a computer's COM-1 or 2 port, and a male DB-25 connector on the other side to "daisy chain" with your data controller, telephone modem, or most other external RS-232 devices.

The software automatically switches the external RS-232 input out of the circuit when AEA-FAX is active. No additional COM port is required.

The software provides on-screen display of the received images, as well as disk and printer access.

AEA-FAX can be programmed to automatically receive images when you are away, and it will automatically detect gray scale, line speed and aspect ratio! The program works with or without a mouse and is menu driven, making it easy to use.

Other feature benefits include an on-screen tuning scope display that can remain active even when receiving data to the screen. Plus you get an automatic screen saver to prolong the life of your monitor. There are also versatile color selections for menu and screen colors. Your facsimile images can be displayed with false color separations on an EGA monitor.

Here is what is required to run AEA-FAX:

IBM compatible computer with 640K conventional memory, DOS 2.1 or higher, at least one serial port, a floppy disk drive (360K 5¼" or 720K 3½"), a printer that is Epson or HP LaserJet compatible,* a Microsoft compatible mouse, a hard disk drive* and general coverage HF SSB receiver.

(*Indicates optional components. They are not required, but their use will enhance the operation of AEA-FAX.)

ISOLOOP™ MODEL 10-30 HF ANTENNA

This high-Q, high-efficiency antenna is perfect for amateurs living in areas with antenna restrictions!

This antenna reflects a significant engineering breakthrough with its high-performance, low profile design. It covers 10-30 MHz continuous at 150 watts and makes it possible for hams to enjoy their hobby in what may seem to be an impossible location.

The antenna is omnidirectional and requires no rotor or antenna tuner.

It can be mounted horizontally or vertically. Horizontal mounting is preferred for best DX performance, due to the lower angle of radiation at low heights. It also allows for easy attic installation. Mounting it vertically provides a null in a specified direction.

The flexible, Iridited aluminum loop band has a very low radiation resistance – ranging from 0.4 to 0.2 ohms!

It can be easily compressed to squeeze through attic openings and other tight spaces. The flexible band also allows for easy transportation and UPS shipping.

The antenna is highly efficient due to precise, heavy-duty construction and design standards.

Efficiency ranges from 96% on 10 meters to 72% on 20 meters. The custom designed, split-stator capacitor has no rotating contacts and is rated at 10,000 volts. (A smaller capacitor would result in a much less efficient antenna design to prevent arcing).

In addition, the high-Q design results in a narrow bandwidth which suppresses harmonics from your transmitter, reducing TVI problems. It also attenuates out-of-band signals, helping to prevent receiver overload.

The capacitor is rotated by a low-noise precision stepper motor, not a DC motor, so exact tuning is a breeze.

An RF-generating DC motor can make tuning to an exact frequency rather difficult. The IsoLoop includes 50 feet of shielded control cable with extensions available.

The IsoLoop comes fully assembled, so getting on the air is just a matter of sliding the loop onto the mast* and tightening down the U-bolt and attaching the coax*.

There are no complicated instructions or mechanical joints. No additional tuner or antenna rotator is required either. With only a simple mast needed for mounting, the IsoLoop makes a very cost effective antenna system. (*User supplied.)

The IsoLoop model 10-30 is compact, round, and measures a scant 35" in diameter and weighs only 14 pounds.

Because it comes fully assembled and operates on 13.8 VDC, it is the ideal antenna for Field Day and DXpeditioning. Use it on a boat, a mobile home, take it wherever you wish! It comes with an AC-1 power supply (U.S. model only), LC-2 with frequency indicator and a 50 foot shielded control cable.

Specifications (Isoloop)

Frequency Coverage:	10 to 30 MHz, continuous
Nominal Impedance:	50 ohms
Power Rating:	150 watts
VSWR:	Less than 1.5:1 (no nearby obstructions)
Temperature:	Operating 0 to 150 degrees F (-17 to 65°C) Storage -50 to 200 degrees F (-45 to 93°C)
Dimensions:	35" (89cm) diameter circle
Maximum Mast Outside Diameter	2" (51mm)
Shipping Weight:	25 lbs. UPS shippable
Coax Connector:	UHF (SO-239)
Gain over dipole:	Depends on elevation

Mast and coax cable not included. Optional LC-2 shielded control cable with connectors available in 50ft. and 100ft. lengths.

See the IsoTuner IT-1 on page 14.

ISOPOLE™ OMNI-DIRECTIONAL VHF/UHF VERTICAL ANTENNAS

The Maximum Gain Antenna with the Patented Cone Decoupling.

The IsoPole™ is available in 144, 220, or 440 MHz versions, and each yields the maximum gain attainable for their respective lengths at zero-degree angle of radiation.

Superior decoupling results in simple tuning and a significant reduction in TVI potential.

There is less feedline pick-up of computer hash noise with the IsoPole than with any equivalent antenna.

Cones offer greater efficiency over obsolete radials which radiate in the horizontal plane.

In addition, the IsoPole offers you broad frequency coverage. There is no loss of power output from one end of the band to the other. When used with SWR-protected solid-state transceivers, you experience a typical SWR of 1.4 to 1 or better across the entire band!

VHF versions include a 50 ohm SO-239 connector recessed within the base sleeve for full weather protection.

Avoid having your SWR change with the weather.

The impedance matching network is designed for maximum legal power.

It compensates for the impedance introduced by the SO-239 connector used in the VHF models.

The IsoPole offers superb strength to withstand the harshest of environments.

The insulating material offers excellent strength and dielectric properties plus superb long-term ultra-violet resistance. The mounting hardware is stainless steel and the decoupling cone and radiating element are made of corrosion resistant aluminum alloys. The aerodynamic cones are the only appreciable wind-load and attach directly to your TV mast (mast not included.)

HOT ROD™ TELESCOPING ANTENNAS

These High-Performance Telescoping, Handheld HALF-WAVE Antennas Give You Maximum Gain and Extended Range.

These antennas make the same improvement to handheld communications that the IsoPole antennas make to base station operation.

Hot Rod achieves higher gain than any 5/8 wave, two meter telescopic antenna for handhelds.

The HR-1 is 20% shorter and lighter than a 5/8 wave, placing less stress on your handheld connector and case. It can handle over 25 watts of power, making it an ideal portable base or mobile antenna. In its collapsed position, the Hot Rod antenna will perform electrically like a helical quarter-wave flexible antenna.

Three model versions are available:

- **HR-1 half-wave 2M**
- **HR-2 half-wave 220 MHz**
- **HR-4 half-wave 440 MHz**

Specifications (Isopole)

Model*:	ISO-144	ISO-220	ISO-440
Frequency Coverage:	135-160 MHz	210-230 MHz	415-465 MHz
Impedance:	50 ohms	50 ohms	50 ohms
2.1 VSWR Bandwidth:	10 MHz @ 146 MHz	15 MHz @ 220 MHz	22 MHz @ 435 MHz
Power Rating:	1.0 KW	1.0 KW	1.0 KW
Length:	125.5" (3.2m)	79.25" (2m)	46" (1.2m)
Wind Area:	< 1ft² (.09m²)	< .75 ft² (.07m²)	< 0.2 ft² (.02m²)
Maximum Mast OD:	1.25" (32mm)	1.25" (32mm)	1.25" (32mm)
Min. Mast Length**:	8.0' (2.4m)	5.25' (1.6m)	6" (50mm)
Coax Connector:	SO-239	SO-239	Type N
Gain (on horizon):	3 dBd	3 dBd	3 dBd
Fully Assembled:	no	no	yes

* Aircraft band and commercial versions also are available.

** Mast not included.

SWR-121 HF ANTENNA ANALYST

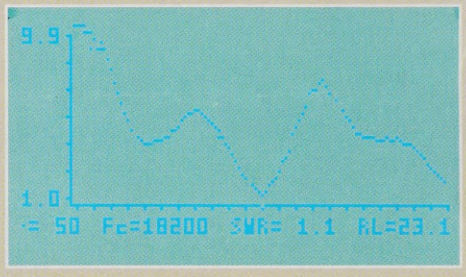
Get a Graphical Display of Your HF Antenna's Performance Over its Operating Spectrum.

The result is a graphical display of SWR versus frequency. Its SWR scaling is automatic, resulting in high resolution. The display also gives SWR and return loss at the center frequency and the current scale factor.

The SWR-121 can be used to test coax by measuring return loss. It also features completely adjustable sweep and SWR ranges.

An RS-232 interface allows for remote control, remote display, and saving of plots (PC software optional). Internal keypad beeper also gives audible indication of SWR, and self-test and calibration functions are built in. Compact and battery-powered, the SWR-121 features automatic battery-saver functions and is ready to go anywhere!

Frequency Range: 1-32 MHz



THE IT-1 AUTOMATIC TUNER FOR THE ISOLOOP 10-30

Make the IsoLoop 10-30 the Easiest Multiband Antenna You'll Ever Use.

With the IT-1 IsoTuner, tuning the IsoLoop typically takes only 1 to 2 seconds. Features include 12-button control keypad with audible beep, thumbwheel knob for manual control and fine tuning, eight programmable memories, and a 10-segment multi-purpose LED bar.
Memory backup and a built-in serial computer interface are also included.

MM-3 MORSE MACHINE

The Morse Machine™ is the Ultimate Morse Keyer/Trainer Needed to Upgrade Your License.

This is the machine you need to break through those tough-to-crack code speed barriers with five easy-to-use training modes, including QSO Simulator for realistic "rag chews" without going on the air. Plus, a DX Contest Simulator is included to sharpen your competitive skills.

The MM-3 delivers 20 "soft partitioned" memories from standard 8K and is expandable to 32K (36,000) characters.

You also get these other fine features:

- Complete flexibility for your Morse Signal – dot & dash length, letter & word spacing, and more
- Straight, Bug, Iambic & Curtis A&B™ keying modes - no changing your operating style!
- Commands can be entered via the keypad or from your computer using the MM-3's serial port
- Automatic serial number generation & insertion
- Paddle reverse command – accommodating different types of paddles
- Real-time or auto-memory spacing
- Use with the SB-90 Russian Key

Specifications (MM-3)

Speed Range:	2 to 99 (variable) or 2 to 255 (programmable) WPM (front panel pot or keypad)
Memory:	8,192 bytes (approx. 8,400 characters) Lithium battery-backed
Memory:	Option: 32,768 bytes (approx. 36,000 characters)
Keying Output:	+50 V, 500 mA max.; -35 V, 30mA max.
Computer I/O:	150 to 9600 baud, RS-232 compatible
QSO Simulator for CW practice	
DX Contest Simulator for a contesting workout	
Serial Numbers:	1 to 9,999 auto incrementing
Beacon Interval Range:	1 to 999 seconds
Increase Speed Time:	0.1 to 59.9 minutes
Dot-Dash Memory On/Off:	Program selectable
Dot-Space Ratio:	Programmable from 0.5 to 1.5
Dash-Space Ratio:	Programmable from 2.0 to 4.0
Semi-Automatic (Bug) Mode:	Program selectable
Power Requirement:	9 to 16 VDC at 200mA
Dimensions:	7.4" (188mm)W x 4.75" (121mm)D x 1.9" (48mm)H
Weight:	1.4 lbs. (0.64kg)

AVT Master for SSTV & FAX The Perfect Accessory for an Amiga Computer and a Short-Wave Receiver.

This hardware and software package lets you receive and transmit images in 55 SSTV (Slow-Scan TV) and nine FAX modes. SSTV images can be received in up to 4,096 colors and FAX image resolution can be as high as 1,024 by 1,200.

VSB-70 Fast-Scan Transceiver

Only AEA offers Vestigial Sideband for amateur TV operators.

It's the best way to send Fast-Scan television signals. While others avoid manufacturing the costly complex circuitry required, AEA delivers the quality hams have come to expect. The VSB-70 transceiver is all you need to work ATV while allowing you to use your TV set to monitor your transmitted and received pictures. Add a video camera and a 440 MHz antenna and you're set! The VSB-70 is easy to use and delivers exceptional video and sound. Just what you would expect from AEA.

Here Are Two Important Television Accessories You Don't Want to Be Without!

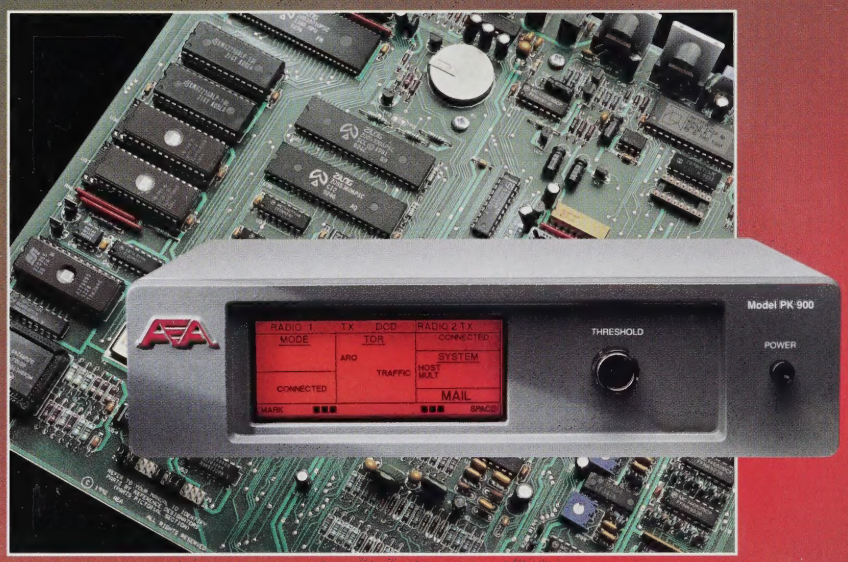
1) The RLA-70 Amplifier With Power Supply helps you preserve the characteristics of Vestigial Sideband.

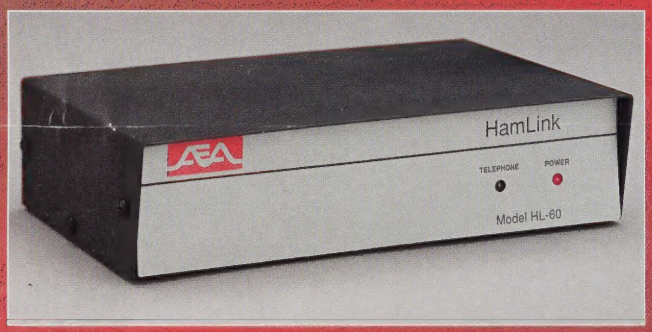
The 50W P.E.P. mast-mounted Linear Amplifier covers 420 to 450 MHz and utilizes the feedline for DC power. The GaAsFET preamp is built-in to the mast-mount assembly and includes all the necessary circuitry.

2) The 430-16 Antenna is built specifically as a high performance, computer-optimized yagi for ATV and OSCAR operation.

Broadband frequency coverage is 420 to 440 MHz, making it a perfect match with the RLA-70 amplifier. It has a gain of 14.3 dBd, O-ring sealed connectors, 28 degree E-plane and 32 degree H-plane beam width, and 16 elements on a 10-foot boom.

PK 900





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All specifications subject to change without notice or obligation.

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